Nature of Charleston's Submerged Cultural Resources

Prehistoric Period

Evidence of prehistoric sites may have survived within South Carolina's waters. While lithic material associated with Native American populations would without question survive the inundation process, the more delicate archaeological evidence would probably be destroyed. This lithic and ceramic evidence could contribute to a better understanding of the distribution of populations in South Carolina prehistory, though site specific data could no doubt be limited. The known inundated prehistoric sites in the Charleston Harbor area consist of little more than artifact scatters.

Evidence of prehistoric watercraft are also a possibility. Native Americans relied heavily on dugout canoes for hunting, fishing, and transportation. These vessels varied widely in size and shape depending on their use. Cypress was the preferred wood for construction, though pine and poplar were also used. At European contact, a typical canoe was 20 feet long and 18 to 20 inches wide. To date at least one prehistoric canoe has been recorded in the Charleston Harbor basin (38 BK 1662, SCIAA Site Inventory Record). Located in a catchment area on the Cooper River above Goose Creek, the canoe represents late Prehistoric watercraft development.

Colonial Period

Vessels associated with the early development of Charleston may be preserved in the numerous marshes, creeks and rivers that make up the Charleston Harbor basin. During the early colonial period the colony relied on small vessels for trade, exploration, and protection. The periauger was a common type of craft in use during that period. This flat-bottom vessel type was built along the traditions of a dugout canoe. They were built up from a keel and garboard strake carved from a single log. They usually contained transom sterns and averaged 40 to 60 feet long (Fleetwood 1982:36). Small shallops, ketches, and sloops built up from a keel and frames carried on the same roles as the periaugers. These vessel types were common throughout the south, and examples of these vessel classes may still survive in the archaeological record.

Trade was carried on by a variety of vessels. While large vessels such as ships and brigs were common to South Carolina's waters, it was small sloops and schooners that carried on the majority of the trade and were favored by local shipwrights. Those vessels were typically under 50 tons, though larger versions were not unknown. Averaging 25 to 50 feet long and 10 to 15 feet wide these small vessels were ideal in the coasting and West Indies trade. There are few known wreck sites which date to this early period of colonial

development. Among the notable examples are the Malcolm Boat (38 CH 803), a possible sloop rigged, small sea going vessel, found at White Hall Plantation. That vessel is approximately 41 feet long and 11 feet wide (Amer 1993).

Ferry Crossings

A number of ferry crossings have been recorded throughout the lowcountry of South Carolina. The development of the colony was intricately tied to a network of ferries. The lowcountry is criss-crossed by numerous streams and creeks. Communication and transportation between the various plantations and Charleston relied heavily on ferries, which also gave Carolinians easy access to the resources in the interior.

An important ferry crossing has been investigated at Strawberry Plantation. That crossing, located 30 miles from Charleston, provided access to the interior of the country and influenced the establishment of Childsbury. The landing is 8 feet wide with a slope of 7° (Barr 1994:83). The principal structural supports consisted of three stacked timbers 20 cm. square. Cross beams were placed every 20 feet along the main beams. A patterned brick floor, three courses thick, had been laid between the timbers. The sides of the floor were supported by support stakes and timbers. While no ferry boats were found in association with the site, vessels found at the Potato Ferry and Browns Ferry containing bow and stern slopes of 7° and 9° respectively suggest that the landing was constructed to fit the shape of ferry ramps (Barr 1994:83).

Plantation Sites

Evidence of activities associated with plantation life survive in South Carolina's lowcountry rivers. South Carolina plantations were intimately tied to the water. The regions waterways were used as arteries of communication, transportation, and commerce. This variety of usage is reflected in the cultural material recovered from submerged and semi-submerged sites. Waterscape features associated with plantation sites include boat landings, sunken or abandoned vessels, causeways, milling stations, and rice fields, dikes, and associated water control systems.

Boat landings and causeways were at the hub of plantation life. While primarily used in conjunction with commercial activities, they were also important social gathering areas. Numerous landings have been investigated in the Charleston area. The Cedar Grove Plantation landing consisted of a lightly built wooden structure filled mainly with soil, but also included shell, gravel and brick (Beard 1993:67). Similarly constructed landings/causeways

have been identified at the Lexington Kiln Site and Archdale Plantation. The preferred method of construction for those landings seemed to have been a filled log crib. Fill material varied according to what was readily available, whether it was soil, brick or ballast stone. Another common feature of those landings were small canals adjacent to the landing for loading and unloading cargo and passengers.

Abandoned vessels are another feature commonly associated with landings. Since landings were high traffic areas it is reasonable to assume that derelict vessels would be abandoned in their vicinity. A wide variety of vessel types can be seen at landings. The Laurel Hill Plantation has no fewer than five wooden plantation barges and one possible ferry associated with it (Beard 1993:75). A small keel barge has been recorded upstream from the Boone Hall Plantation landing. The Malcolm Boat (38 CH 0803), possibly a sloop rigged small sea going vessel, was found near the mouth of a small creek adjacent to a landing associated with the White Hall Plantation (Beard 1993:75). Vessels recorded in conjunction with landing sites provide important data concerning the construction of small southern work boats.

Shipyards

Shipbuilding played an important role in South Carolina's development. Sites associated with shipbuilding provide invaluable information concerning the development of the Charles Town colony and the shipbuilding industry in South Carolina. In the Charleston area important shipyards were established on James Island, Shipyard Creek, and Hobcaw Creek. To date no shipyard sites have been found on James Island, and the remains of the Shipyard Creek site have been impacted by the construction of the Naval Complex along Shipyard Creek. Two shipyards have been documented along Hobcaw Creek. The Pritchard Shipyard (38 CH 1049), which built innumerable merchant vessels, was also the site of South Carolina's state shipyard during the Revolution. The site consists of several wharf structures and a slipway. Because the site fronted directly on the creek there was no need of a causeway, which was a typical feature of most river sites (Beard 1993:70). The Lind Shipyard site (38 CH 0444), located further up Hobcaw Creek from the Pritchard Shipyard, consists of a causeway of heavily-built timber cribbing filled with ballast stone.

Rice Production

The location and investigation of rice gates, and associated water control systems, could contribute important data on rice production in the low country of South Carolina and Georgia. Rice cultivation in South Carolina began in the late seventeenth century. Although initially grown in upland

areas without the aid of irrigation, problems such as droughts and floods caused a shift in rice cultivation to tidal areas by the late eighteenth century. The switch to tidal areas allowed planters to utilize tidal action as a means of draining and flooding the rice fields.

With time, rice field construction became very systematic. While the outside banks followed the course of the river, the check banks, which divided the fields, were constructed as straight as possible (Leech 1988:28). To help control flooding during unusually high tides, the outside banks were built at least one to two feet above the highest spring tide mark (Leech 1988:28). The floodgates, or trunks, varied in size from about 20 to 30 feet in length, extending through the bank of the canal. Although most trunks were equipped with one gate, two gates were not uncommon. For example, if a rice trunk was intended to serve as a flowing gate, then gates were constructed at both ends of the trunk (Leech 1988:28). In addition, larger canals capable of supporting flats would have had two doors on the gate. An example of a rice gate was recorded by the South Carolina Institute of Archaeology and Anthropology in 1985 (38 BK 0858). The gate contained two granite columns, with each column supporting a brick wall. The floor was planked, and the river end of the gate was supported by puncheons.

Flats/Barges

The rice, cotton, and phosphate industries gave rise to the use of barges or flats, a common vessel type throughout the lowcountry. Barges, or flats, were used extensively to carry bulk cargo through the shallow waterways connecting Charleston with the hinterland. Rice flats were built in various sizes depending on their function. Smaller flats were constructed to operate within the fields while larger ones were used in the canals separating the fields and in rivers. Rice flats were typically flat-bottomed boats averaging 12 feet wide and 45 feet long. They were constructed with transverse planks, internal stringers and had angled ramps (Amer 1993). The later canal boats and phosphate barges were larger adaptations of rice flats. Built to carry heavy loads, these vessels were very sturdy, and averaged 60 to 90 feet long and 10 to 15 wide.

Examples of those types of craft survive throughout the Charleston Harbor area. Five wooden plantation barges have been recorded near the Laurel Hill Plantation landing (38 CH 0803). The Houk Barge, was documented by SCIAA personnel in 1992 (38 BK 0062). This 36 feet long and 12 1/2 feet wide barge was heavily built with two layers of planking. Other barge examples include the TOO-2 site (38 CH 0481), Boone Hall Plantation Landing (38 CH 1209), and the Ashley T-4 Wreck (38 CH 0438).

Military Activities

During wartime, naval action resulted in the loss of many vessels in waters surrounding Charleston. As the largest city in the colonial south, Charleston's strategic location and economic importance made it a prime target for British forces. As a direct result of military activities, many vessels were lost in the Charleston area. For example, four hulks were scuttled in the Hog Island channel in 1775, and eleven other vessels, including four armed frigates, were scuttled in the mouth of the Cooper River in 1780. All of these vessels were sunk, for military purposes, as navigational obstructions. In addition, the British lost two warships in Charleston during the war. The H.M.S. *Actaeon* grounded and was abandoned off Fort Moultrie in July 1776. Five years later H.M.S. *Thetis* was lost as the British abandoned Charleston. During the British occupation of Charleston the vessel *Friendship* grounded on the Middle Ground and broke up in 1780. The privateer *Lord North* and the vessel *Jamaica* sank inside the harbor in 1781. A possible Revolutionary War era vessel was recorded by SCIAA personnel at Little Landing in 1988 (38 BK 0861). Approximately 20 feet of vessel structure survives. Two cannon and one swivel gun, dating to the 1770s were recovered in the area.

Charleston was again a focal point of military activity during the Civil War. During the war many ships were lost or sunk as a result of military activity. In December 1861, sixteen vessels loaded with granite and designated the "Stone Fleet" were sunk checkerboard fashion across the mouth of the main channel in an effort to seal the harbor. The Union Navy also lost numerous ships during its blockade of the harbor. The Union ironclads *Keokuk, Weehawkin* and *Patapsco* were sunk during blockading duties and attacks on Fort Sumter. The USS *Housatonic* was sunk outside the harbor by the Confederate submersible CSS *Hunley*, which was also lost during the action. Preceding their withdrawal, Confederate forces destroyed the ironclads *Chicora, Palmetto State*, and *Charleston* to prevent them from falling into Union hands. In addition to warships, many blockade runners were destroyed in the Charleston area. The *Georgiana, Minho, Etiwan, Raccoon, Presto, PrinceAlbert, Flora*, and *Beatrice* were all lost attempting to run the blockade.

Significance of Charleston's Submerged Cultural Resources

Charleston's submerged cultural resources preserve an invaluable record of human activity. Properly investigated, the remains of ships, ferry crossings, landings, inundated habitation sites, plantation sites, and even refuse sites can provide South Carolinians with insight into their past that is not available elsewhere. Sunken ships and small vessels contain a wealth of important information about the ethnic origins and evolution of regional

vessel architecture as influenced by Charleston's unique environment. Regional construction materials and technology also influenced vessel construction. Unfortunately, there are few records associated with the design and construction of eighteenth and nineteenth century vessels used in South Carolina, including the Charleston region. Additionally, only a small percentage of those records have survived in the historical record. Therefore, the archaeological record associated with Charleston's waterways frequently represents the only source of data available to support reconstruction of those aspects of Charleston's maritime heritage.

In addition to the physical remains of vessels, shipwreck sites almost invariably contain rich and varied collections of associated artifacts. Many artifacts, such as navigational equipment, fittings and tools are associated with the vessel itself and reflect the shipboard technology associated with maritime commerce. Other cultural material associated with the vessel may shed light on the life styles of the officers, crew, and passengers. In many cases those personal effects afford our only opportunity to examine their lives aboard ship. The cargoes of lost ships can be equally revealing. In many cases the cargo provides detailed evidence of trading patterns associated with the transitions in our development. Analysis of cargo can identify social preferences, reveal the transformation of technologies far removed from maritime commerce, and help establish the nature of trade.

Although shipwrecks are perhaps the most readily apparent submerged cultural resources in Charleston's waters, the remains of small vessels, inundated habitation sites, water-related structures, and accumulations of refuse and debris associated with onshore activities can be extremely important. Frequently, underwater archaeological sites preserve material that have deteriorated on terrestrial sites. Development is a continuing process and the lives of each generation are often built upon the residue of their forefathers. Until recently, material lost beneath the surface of the water was not accessible and therefore remained relatively undisturbed. Today, however, underwater archaeological sites preserve evidence that has otherwise disappeared.

Threats to Charleston's Submerged Cultural Resources

Threats to Charleston's submerged cultural resources are apparent in a variety of conditions. The Charleston Harbor basin is a high energy environment. The harbor area has a tidal variation of approximately three to three and one half feet. Sites located along the shorelines are extremely vulnerable to erosional forces, whether natural or man-made. Consequently, once exposed, many sites have been lost to erosion. For instance, the Malcolm Boat (38 CH 0803) was initially discovered eroding out of the bank of the Ashley River. Erosional effects, primarily from tides and power boats,

seriously threatened the site. As a result, sand bags were placed around the wreck's exposed portions as a means to protect the surviving wreck structure. Due to erosion and the possibility of vandalism, SCIAA personnel documented the site in 1992 (Amer 1993)

Vandalism constitutes another threat to Charleston's submerged cultural resources. Many of South Carolina's most important wrecks lie in shallow waters within easy reach of the diving public. Because the lure of souvenirs is a strong attraction many wreck sites are damaged and/or destroyed. Relic hunters often use highly destructive techniques. Vandalism at the Little Landing Wreck (38 CH 0861), a Revolutionary War era vessel located south of Moncks Corner serves as a good example (Beard 1991). Documented by SCIAA during the period 1986 to 1989, the Little Landing 1 Wreck was refilled with ballast and left *in situ* to provide divers with an opportunity to explore an eighteenth century site. However, during its 1991 Underwater Archaeology Field School for Sport Divers, SCIAA personnel discovered that divers looking for artifacts had removed the ballast pile and torn loose ceiling planks and frames. In an attempt to prevent further vandalism and stabilize the wreck structure, the vessel was filled with two layers of sand separated by a section of O-link fence. As a result of their actions of a few inconsiderate individuals have deprived other divers of the opportunity to enjoy an important part of South Carolina's maritime heritage. The continued destruction of historic vessels in that manner increases the loss of irreplaceable data.

Archaeological investigation can also be destructive to submerged sites. Even when an archaeological investigation has been designed to minimize impact on a submerged cultural resource, the actual excavation can expedite deterioration. When a vessel has been buried beneath the bottom surface, the deterioration rate slows due to the lack of oxygen. The anaerobic environment hinders the growth of microorganisms that destroy underwater materials. When the wreckage becomes exposed the deterioration rate begins to accelerate. Therefore, it is the responsibility of the researcher to incur as little damage to the site as possible.

Salvage operations are one of the most destructive actions imposed upon historic shipwrecks. Parties interested in salvaging a vessel or its cargo are often times unconcerned with the vessel's historic value. The use of cutting tools and explosives can completely destroy a vessel and eliminate any possibility of recording its construction or artifacts.

Previous Archaeological Research

In July of 1979, SCIAA personnel performed a three week field investigation of a section of the Wando River. The survey included remote sensing operations with side scan sonar and magnetometer, as well as diver investigation of any acoustic or magnetic anomalies. The area, scheduled to be impacted by the construction of new dock facilities by the South Carolina Ports Authority, was found to contain no significant archaeological remains (Albright 1980).

In 1980, Tidewater Atlantic Research personnel performed a magnetometer and diver survey of an area of the Wando River scheduled to be impacted by construction of the Mark Clark Expressway. Of the eleven potential sites located by TAR personnel, five proved to be associated with historic maritime activities. Those included the remains of two vessels (Tidewater Atlantic Research 1980). Also in 1980, the Division of Underwater Archaeology (SCIAA) surveyed the Mepkin Abbey wreck, a nineteenth century coastal vessel located in the Cooper River. The vessel was 48 feet long and 11 feet wide. Researchers spent approximately two weeks surveying the wreck (Wilbanks 1981:151-157).

In 1985, SCIAA and TAR personnel completed an acoustic and magnetic survey in the area where the Ashley River Bridge was constructed. In addition, diver searches were performed in Wappoo Creek, along the James Island Bridge impact corridor. Neither of these surveys revealed any significant submerged cultural resources (Albright *et. al.* 1985).

In 1985, a submerged cultural remote sensing survey was conducted by Tidewater Atlantic Research for the Charleston District Corps of Engineers in the shipping channel from Goose Creek in the Cooper River to the Sea Buoy Red '2C' in the Atlantic Ocean (Watts 1986). A total of 19 remote sensing targets were identified as having characteristics often associated with significant submerged cultural resources. In 1989, eight selected underwater sites in Charleston Harbor were investigated in conjunction with plans to deepen the channel. No cultural material of historical significance was identified. (South Carolina Institute of Archaeology & Anthropology 1989).

In 1987, Tidewater Atlantic Research completed an underwater archaeological investigation in conjunction with the proposed construction of the replacement of the Grace Memorial Bridge Route across the Cooper River. No targets of historical significance were identified in the proposed bridge construction corridor (Watts 1987 and Garrow 1989). Also in 1987, Beard and Irion investigated several magnetic anomalies within Charleston Harbor. None of the anomalies proved historically significant (Beard 1987).

In 1989, Tidewater Atlantic Research under subcontract to Turner Collie and Braden, Inc., conducted historical and cartographic research, as well as a remote sensing and underwater assessment for the United States Navy, Southern Division, Naval Facilities Engineering Command on the west side of the Cooper River adjacent to Shipyard Creek. The survey was designed to assess the potential for finding submerged cultural resources in an area planned for the construction of a homeporting facility for SSN Submarines and support ships. Although 24 remote sensing targets were discovered, none of the targets were identified as historically significant sites (Watts 1989).

In 1991, Tidewater Atlantic Research under subcontract to Turner Collie and Braden Inc., for the United States Department of the Navy (WPNSTA) conducted a literature survey to assess the potential for finding significant cultural resources at the Naval Weapons Station at Charleston, South Carolina. Due to the historical significance of the Charleston area and the fact that there have been no previous historical or archaeological investigations at the WPNSTA, Tidewater Atlantic Research recommended an historic architectural assessment of standing structures and terrestrial and underwater surveys of construction locations in the proposed project area.

In 1992 SCIAA personnel performed the final phase of research regarding the Malcolm Boat, a sloop dating from the last quarter of the eighteenth century or the first quarter of the nineteenth century. Research included historical and archaeological documentation (Amer 1993). Also in 1992, SCIAA personnel and local sport divers carried out a swim survey of a two mile section of the West Branch of the Cooper River. The survey was intended to increase sport diver education as well as locate and assess submerged cultural resources in the two mile stretch of the river (Harris 1993).

In order to determine the impacts of proposed harbor and channel improvements on underwater archaeological sites, the U.S. Army Corps of Engineer District, Charleston contracted for an archaeological remote sensing survey of portions of Charleston Harbor in 1994. Project areas within Charleston Harbor were surveyed by Tidewater Atlantic Research in conjunction with a geophysical remote sensing survey conducted by personnel from the Waterways Experiment Station. That survey resulted in the identification of 32 magnetic and/or acoustic anomalies. Seven were determined to have signature characteristics that are indicative of potentially significant submerged cultural resources. In a modification of the contract, the bar channel survey area was expanded to relocate and identify the location of the U.S.S. *Patapsco*. In March 1995, diver inspections of one target site adjacent to Folly Reach and another adjacent to Clouter Reach identified material generating those signatures as modern debris and geological features.

Resource Area Sensitivity Analysis

Several determinants weighed heavily in the sensitivity assessment of Charleston's submerged cultural resources. First, the project area's tremendous amount of historical maritime activity, throughout the seventeenth, eighteenth, nineteenth, and twentieth centuries, was a primary consideration. Without question, Charleston is one of America's most historic seaports. Moreover, the rivers and creeks surrounding Charleston supported an extensive array of maritime related activities. Consequently, the waterways served as the region's primary transportation network up until the twentieth century. Although the inland waterways are no longer the region's principal transportation network, Charleston remains an important link in the trading network of the southeastern United States.

Second, the high degree of mobility associated with ships creates one of the major problems associated with predicting the location of shipwrecks. Without a fairly specific documentary record, our ability to develop accurate predictive models for shipwreck locations is extremely limited. Given the historically high usage of waterways such as the Cooper, Ashley and Wando, one can not eliminate the possibility of intact shipwrecks in any unsurveyed or undisturbed areas. The possible geographical range of historic vessel locations includes, waterways, such as rivers and small creeks, marshland, and even underneath certain sections of downtown Charleston. Moreover, without surveys, it is virtually impossible to determine the extent of submerged archaeological resources.

Although the ability to accurately predict the location of shipwrecks is limited, the documentation of historically active maritime areas, including landings, plantations and brickyards, provides a useful technique for indicating potentially sensitive cultural resource areas. By examining documentary and cartographic resources one may begin to map cultural activity areas along the waterways and therefore establish areas with submerged archaeological potential. Due to the generally high level of maritime activity on the project area waterways, it must be assumed that a lack of documented historical areas or known archaeological sites does not necessarily provide a contraindication for submerged archaeological resources.

While the nature of the project does not allow the construction of a quantifiable model for assessing areas of resource potential, it is possible to examine the spatial relationship of various factors such as historic activity and archaeological resources and create sensitivity levels or zones. Areas that are unsurveyed, undisturbed, and in close proximity to historic activity areas, appear most likely to contain submerged cultural resources. Consequently, Tidewater Atlantic Reseach personnel examined five factors in determining zones of sensitivity. Those factors included historical activity, known

submerged archaeological sites, levels of previous submerged archaeological survey and levels of previous bottom disturbance and expected population growth within a particular water basin. Ratings included Zone-1 (high sensitivity), Zone-2 (moderate sensitivity) and Zone-3 (low sensitivity).

Overwhelmingly, the majority of the project area's waterways and marshes are classified with a Zone-1 (high sensitivity) rating. In part, that is attributed to the extensive levels of historic settlement along the waterways, as well as the intensive use of the waterways, for communication and transportation, throughout the historic period. The Zone-1 rating is also a function of the project area's limited amount of comprehensive submerged archaeological survey data. Unfortunately, due to budgetary constraints, archaeological survey often arises from a project specific need, such as impact assessments for construction projects. As a result, much of the project area lacks comprehensive survey data, both for the waterways and the marsh.

In general, there were two scenarios that produced a Zone-3 (low) sensitivity rating. Within any given area, for example, the inclusion of extensive archaeological survey combined with extensive bottom disturbance activity, such as dredging, produced a Zone-3 rating. In addition, extended periods of dredging and other bottom disturbance activity such as found near Navy Yard Reach on the south side of the Cooper River, produced a Zone-3 rating. Ultimately, areas with high levels of bottom disturbance combined with negative results associated with extensive archaeological surveys produced a Zone-3 (low) rating.

As additional data is generated by historical and archaeological research, the level of accuracy of the sensitivity zones can be significantly enhanced. Increased data will also ultimately permit more sophisticated predictive models to be developed. As those data are collected, the GIS database developed for Charleston Harbor can be expanded and the zones of sensitivity refined.

Legislation and Regulations Regarding Submerged Cultural Resources

Resource Ownership

The question of ownership regarding submerged cultural resources in South Carolina has been addressed in both state and Federal law. The ownership of submerged cultural resources, such as shipwrecks, is dependent upon whether the resources are located within the boundary of the state. South

Carolina claims ownership of any cultural material located within the state's navigable water and territorial boundaries that include a zone extending three miles offshore.

Three legislative acts, the Abandoned Shipwreck Act, 43 U.S.C. S 2105, the Historic Preservation Act, and the Submerged Lands Act, provide states with rights to submerged materials within their waters. For example, under the Abandoned Shipwreck Act a shipwreck belongs to the State of South Carolina if it is: 1) embedded in submerged lands of the state or, 2) included in or determined eligible for inclusion in the National Register. The Historic Preservation Act established a State Historic Preservation Officer to help protect each state's historical and archaeological resources.

Under the Abandoned Shipwreck Act, the Department of the Interior and National Park Service have issued a set of final guidelines to help states manage shipwrecks in their waters. Those guidelines are advisory only and are as follows:

> Abandoned shipwreck means any shipwreck to which title voluntarily has been given up by the owner with the intent of never claiming a right or interest in the future and without vesting ownership in any other person. By not taking any action after a wreck incident either to mark and subsequently remove the wrecked vessel and its cargo or to provide legal notice of abandonment to the U.S. Coast Guard and U.S. Army Corps of Engineers, as is required under provisions in the Rivers and Harbors Act (33 U.S.C. 409), an owner shows intent to give up title. Such shipwrecks ordinarily are treated as being abandoned after the expiration of 30 days from the sinking.
>
> (a) When the owner of a sunken vessel is paid the full value of the vessel (such as receiving payment from an insurance underwriter) the shipwreck is not considered to be abandoned. In such cases, title to the wrecked vessel is passed to the party who paid the owner.

Under the South Carolina Underwater Antiquities Act of 1991, the State of South Carolina claims ownership of all submerged archaeological historic properties located on or recovered from submerged lands. The Submerged Lands Act of 1953 affirms state ownership of all constantly submerged land within the individual states' navigable bodies of water. The term "submerged archaeological historic property" under section 54-7-620 of the act means "any site, vessel, structure, object, or remains which: yields or is likely to yield information of significance to scientific study of human prehistory, history, or culture and is embedded in or on submerged lands and has

remained unclaimed for fifty years or longer." This term includes, but is not limited to, abandoned shipwrecks and their contents, as well as individual assemblages of historic or prehistoric artifacts.

An additional level of protection is afforded submerged cultural resources that qualify for inclusion on the National Register of Historic Places. Sites determined eligible or included on the National Register are specifically protected by Federal legislation. Site disturbing activities that are related to state and Federal agency responsibilities, or are permitted by state and Federal agencies, are specifically regulated.

To qualify for the National Register of Historic Places, a shipwreck "must be significant in American history, architecture, archaeology, engineering, or culture, and possess integrity of location, design, setting, materials, workmanship, feeling, and association." To be considered significant the vessel or shipwreck must meet one or more of four National Register criteria. These criteria include:

A. Association with events that have made a significant contribution to the broad patterns of our history; or

B. Be associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

It is apparent that even without positive identification, a wreck under investigation can meet the qualifications listed above and therefore should be considered potentially eligible for nomination to the National Register of Historic Places (National Register Bulletin 20).

Administration and Management Authority

State and Federal law has established ownership of shipwrecks, but it remains up to the State of South Carolina to administer those laws. In South Carolina, under Section 54-7-640 of the South Carolina Underwater

Antiquities Act of 1991, the responsibility for abandoned property on submerged state land is placed under the auspices of the South Carolina Institute of Archaeology and Anthropology. Vessels determined eligible for nomination to the National Register are the responsibility of the Secretary of the Interior under 43 U.S.C. *S* 2105(b). Procedures for nominating a site to the National Register are found within the regulations of 36 C.F.R. Part 63 (National Register Bulletin 20). No single agency administers complete regulatory control for submerged cultural resource management.

The single most important element of a submerged cultural resource management program is the Section 106 Review Process. Sections 106 and 110(f) of the National Historic Preservation Act of 1966 (as amended) require that agencies assess the effects of Federal, federally assisted, or federally licensed projects on properties included in or eligible for inclusion in the National Register of Historic Places. The Section 106 process has been designed to address historic preservation priorities. Information assessment is the initial step in the 106 review process. Following a determination by federal or state assignees (Agency Officials) that a project may adversely affect cultural resources, the Agency Official initiates an assessment of information needed to complete the 106 process. Next, the Agency Official seeks to locate historic properties in the project area. The Agency Official and the State Historic preservation Officer then evaluate whether properties found are "historic" and potentially eligible for nomination to the National Register. If there are no National Register, or National Register eligible properties within the project area, the Agency Official is not required to take further action in the Section 106 process. When historic properties are found, the Agency Official must assess the projects effects upon the historic property. By providing easily accessible site specific and regional information, GIS facilitates a more effective, project specific 106 Review and Compliance process.

All Federal, federally assisted, or federally licensed projects that impact the submerged bottom lands of South Carolina are reviewed through the 106 process. Where the potential for submerged cultural resources appears to be high, or there are known submerged cultural resources in the area, the SHPO may require a Phase I survey. Phase I surveys are generally designed to employ remote sensing equipment such as side scan sonar, sub-bottom profilers and proton precession magnetometers to identify submerged cultural resources. Where targets with magnetic and/or acoustic signatures that are determined to be suggestive of potentially significant targets are identified, additional investigation may be required. That Phase II investigation is generally designed to identify material generating the target signature, collect sufficient historical and archaeological data to support a determination of National Register eligibility and assess the impact of project related activities.

Where National Register eligible submerged cultural resources are identified and proposed project activities will have an adverse impact on the site, Phase III data recovery may be required. Phase III projects are designed to preserve by documentation those aspects of the archaeological record that make the site National Register eligible. In cases where the resource is particularly valuable Phase III research may also be designed to preserve the surviving vessel fabric and/or other cultural material. With occasional exceptions for highly significant resources requiring a unique approach to preservation, Phase III activity usually clears the way for project related activities. All submerged cultural resource related research activity must be conducted by trained personnel that meet professional standards adopted by the Secretary of Interior and identified in Federal Register (Code of Federal Register, Vol. 48, No. 190, 29 September 1983).

Enforcement

The State Historic Preservation Officer and the South Carolina Institute of Archaeology and Anthropology protect South Carolina's submerged historical and archaeological resources. The State Preservation Officer does not physically enforce laws, he or she works in conjunction with federal and state law enforcement agencies. Under Federal law the U.S. Navy, U.S. Coast Guard, U.S. Army Corps of Engineers and National Park Service are mandated with responsibility to enforce Federal laws. The Attorney General and state law enforcement agencies, such as the State Highway Patrol, County Sheriffs Department, Department of Natural Resources, local police and the Ports Authorities, are also empowered to enforce laws concerning submerged cultural resources. The Department of Natural Resources, which controls submerged bottom lands, works in conjunction with the South Carolina Attorney General to enforce South Carolina laws, as well as answer legal questions pertaining to current legislation and regulations set forth by both Federal and state agencies. Enforcement in South Carolina is closely coordinated by the South Carolina Institute of Archaeology and Anthropology.

Summary

Within the realm of state managed submerged cultural resource programs, the GIS database created by Tidewater Atlantic Research for the Charleston Harbor Project represents a prototype . Since GIS is a relatively novel approach to the management and preservation of submerged cultural resources, there will inevitably be a learning curve within the development and use phases of GIS implementation. As a result, the GIS database and management document created by Tidewater Atlantic Research does not

represent a set of definitive answers regarding the identification and preservation of Charleston's submerged cultural resources. On the contrary, the work represents one additional step in an on-going process.

It is increasingly apparent that GIS will become an extremely useful tool for archaeologists and resource mangers. In particular, the use of GIS presents an excellent opportunity to increase the efficiency of submerged cultural resource management. By creating a digital record of important resource information, regulatory agencies will have an increased level of access and useability. Consequently, resource managers may preserve and protect an increased number of important submerged archaeological sites. While GIS will probably never replace hard copy site documentation, the continued development and use of this technology appears certain. As with any technological advancement, user adaptation will at times seem slow, but through continued development and research GIS implementation will prove extremely beneficial for submerged cultural resource mangers. GIS design, implementation, and maintenance, will remain an ongoing process. To be effective, the GIS database will be need to be adopted as the primary reference in the 106 process. It will also need to be periodically updated with new information generated by professional and avocational activity.

The Charleston Harbor GIS database can perhaps best serve as a point of departure. Completion of this project does not complete computerization of Charleston's submerged cultural resource information. At best, it can provide a valuable baseline for implementing submerged cultural resource management within the Charleston Harbor area. That in itself is an important step in the management process.

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